

# UNISONIC TECHNOLOGIES CO., LTD

# LD1117/A

#### LINEAR INTEGRATED CIRCUIT

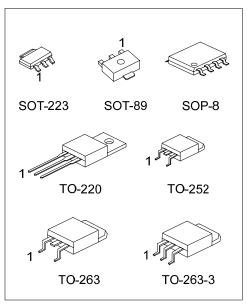
# LOW DROP FIXED AND ADJUSTABLE POSITIVE VOLTAGE REGULATORS

#### **DESCRIPTION**

The UTC LD1117/A is a low dropout, 3-terminal positive voltage regulator designed to provide output current up to 800mA/1A, There are adjustable version (V<sub>REF</sub>=1.25V) and various fixed versions.

#### **FEATURES**

- \* Low dropout voltage
- \* Suitable for SCSI-2 active termination if Vou⊤ set to 2.85V
- \* Output current up to 0.8A for 1117 and 1.0A for 1117A
- \* Built-in current limit and over temperature protection
- \* Available in  $\pm 1\%$ (at 25°C) and 2% in all temperature range
- \* Low current consumption

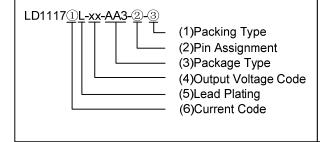


\*Pb-free plating product number: LD1117L-xx / LD1117AL-xx

#### ORDERING INFORMATION

Order I	Number	Dookogo	2	3		
Normal	<u> </u>		Pin Assignment	Packing		
LD1117①-xx-AA3-②-③	LD1117①L-xx-AA3-②-③	SOT-223				
LD1117①-xx-AB3-②-③	LD1117①L-xx-AB3-②-③	SOT-89	A: GOI			
LD1117①-xx-TA3-②-③	LD1117①L-xx-TA3-②-③	TO-220 B: OG	B: OGI	D: Tone Deel		
LD1117①-xx-TN3-②-③	LD1117①L-xx-TN3-②-③	TO-252	( .' (¬(()	R: Tape Reel T: Tube		
LD1117①-xx-TQ2-②-③	LD1117①L-xx-TQ2-②-③	TO-263	D: IGO	i. Tube		
LD1117①-xx-TQ3-②-③	LD1117①L-xx-TQ3-②-③	TO-263-3				
LD1117①-xx-S08-②-③	LD1117①L-xx-S08-②-③	SOP-8	GOOIxOOx			

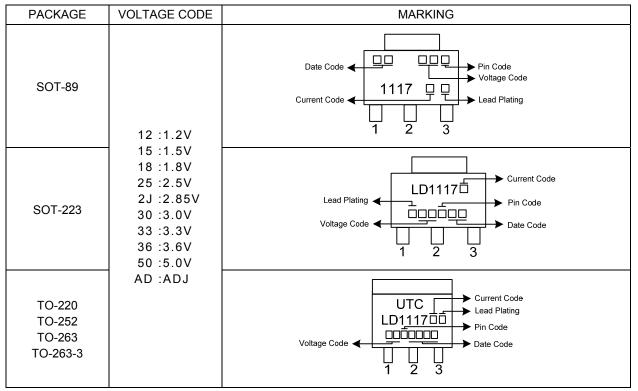
Note: Pin Assignment: I:V<sub>IN</sub> O:V<sub>OUT</sub> G:GND



- (1) R: Tape Reel, T: Tube
- (2) refer to Pin Assignment
- (3) AA3: SOT-223, AB3: SOT-89, TA3:TO-220, TN3: TO-252, TQ2: TO-263, TQ3: TO-263-3, S08: SOT-8
- (4) xx: refer to Marking Information
- (5) L: Lead Free Plating, Blank: Pb/Sn
- (6) Blank: 800mA, A: 1A

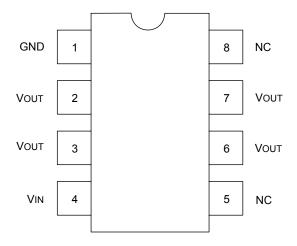
www.unisonic.com.tw 1 of 12 QW-R102-006,Q

#### ■ MARKING INFORMATION

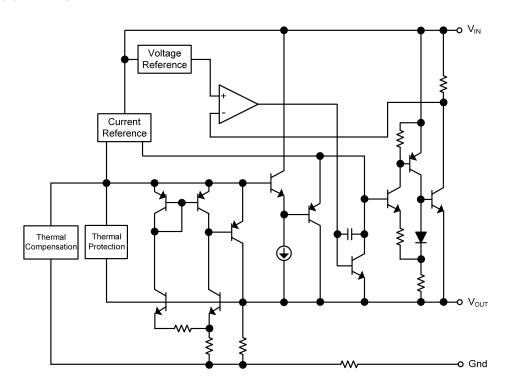


Note: Current code: Blank: 0.8A A: 1A

### ■ PIN CONFIGURATION



#### ■ BLOCK DIAGRAM



#### ■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
DC Input Voltage	$V_{IN}$	18	V
Power Dissipation	$P_{D}$	Internally limited	
Junction Temperature	TJ	+150	°C
Storage temperature	$T_{STG}$	-65 ~ +150	°C

Note Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

#### ■ RECOMMENDED OPERATING RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Input Voltage	$V_{IN}$	15	V
Operating Junction Temperature Range	TJ	0 ~ +125	°C

#### ■ ELECTRICAL CHARACTERISTICS

(Ta=25°C, refer to the test circuits, TJ=0 to 125°C, Co=10 $\mu$ F unless otherwise specified)

#### For LD1117/A-1.2

PARAMETER	SYMBOL	TEST CONDITION	NS	MIN.	TYP.	MAX.	UNIT
Output Voltage	$V_{OUT}$	V <sub>IN</sub> =3.2V, I <sub>OUT</sub> =10mA, T <sub>J</sub> :	=25°C	1.188	1.200	1.212	V
		V <sub>IN</sub> =2.7 to 8V					
Output Voltage	$V_{OUT}$	LD1117 : I <sub>OUT</sub> =0 ~ 800n	nA	1.176	1.200	1.224	V
		LD1117A : I <sub>OUT</sub> =0 ~ 1.0A					
Line Regulation	$\Delta V_OUT$	$V_{IN}$ =2.7 to 8V, $I_{OUT}$ =0mA			1	6	mV
		V <sub>IN</sub> =2.7V					
Load Regulation	$\Delta V_{OUT}$	LD1117 : I <sub>OUT</sub> =0 ~ 800mA			1	10	mV
		LD1117A : I <sub>OUT</sub> =0 ~ 1000					
Temperature stability	$\Delta V_{OUT}$			0.5		%	
Long Term Stability	$\Delta V_{OUT}$	1000 hrs, T <sub>J</sub> =125°C		0.3		%	
Operating Input Voltage	$V_{IN}$	I <sub>OUT</sub> =100mA			15	V	
Quiescent Current	ΙQ	V <sub>IN</sub> ≤10V			5	10	mA
Current Limit	I <sub>LIMIT</sub>	V <sub>IN</sub> =6.2V, T <sub>J</sub> =25°C	LD1117	800			mA
Current Limit	ILIMIT	V <sub>IN</sub> =6.2V, T <sub>J</sub> =25°C LD1117A		1000			ША
Minimum Load Current	I <sub>O(MIN)</sub>	V <sub>IN</sub> =15V			2	5	mA
Output Noise Voltage	eN	B=10Hz to 10KHz, $T_J$ =25	5°C		100		μV
Supply Voltage Rejection	SVR	I <sub>OUT</sub> =40mA, f=120Hz, T <sub>J</sub>	=25°C,	60	75		dB
- appriy remage regions.		V <sub>IN</sub> =4.2V, V <sub>RIPPLE</sub> =1Vpp					
		I <sub>OUT</sub> =100mA			1.00	1.10	V
Dropout Voltage	$V_D$	I <sub>OUT</sub> =500mA			1.15	1.25	V
		I <sub>OUT</sub> =800mA			1.20	1.30	V
		I <sub>OUT</sub> =1000 mA			1.20	1.30	V
Thermal Regulation		Ta=25°C, 30ms Pulse			0.01	0.10	%/W

#### For LD1117/A-1.5

DADAMETED	SYMBOL	TEST CONDITIO	MC	MINI	TVD	MAY	UNIT
PARAMETER		TEST CONDITION		MIN.	TYP.	MAX.	
Output Voltage	V <sub>OUT</sub>	$V_{IN}$ =3.5V, $I_{OUT}$ =10mA, $T_{J}$ =	=25°C	1.485	1.500	1.515	V
Output Voltage	V <sub>OUT</sub>	$V_{IN}$ =3 to 8V LD1117 : $I_{OUT}$ =0 ~ 800n LD1117A : $I_{OUT}$ =0 ~ 1.0A		1.470	1.500	1.530	٧
Line Regulation	$\Delta V_{OUT}$	$V_{IN}$ =3 to 8V, $I_{OUT}$ =0mA			1	6	mV
Load Regulation	$\Delta V_{OUT}$	V <sub>IN</sub> =3V LD1117 : I <sub>OUT</sub> =0 ~ 800n LD1117A : I <sub>OUT</sub> =0 ~ 1000		1	10	mV	
Temperature stability	$\Delta V_{OUT}$			0.5		%	
Long Term Stability	$\Delta V_{OUT}$	1000 hrs, T <sub>J</sub> =125°C			0.3		%
Operating Input Voltage	$V_{IN}$	I <sub>OUT</sub> =100mA				15	٧
Quiescent Current	IQ	V <sub>IN</sub> ≤10V			5	10	mA
Current Limit	I <sub>LIMIT</sub>	V <sub>IN</sub> =6.5V, T <sub>J</sub> =25°C	LD1117	800			mA
			LD1117A	1000			
Output Noise Voltage	eN	B=10Hz to 10KHz, $T_J = 25$	5°C		100		μV
Supply Voltage Rejection	SVR	$I_{OUT}$ =40mA, f=120Hz, T <sub>J</sub> = $V_{IN}$ =4.5V, $V_{RIPPLE}$ =1Vpp	=25°C,	60	75		dB
		I <sub>OUT</sub> =100mA			1.00	1.10	٧
Dronout Voltage		I <sub>OUT</sub> =500mA			1.15	1.25	V
Dropout Voltage	$V_D$	I <sub>OUT</sub> =800mA			1.20	1.30	V
		I <sub>OUT</sub> =1000 mA			1.20	1.30	V
Thermal Regulation		Ta=25°C, 30ms Pulse			0.01	0.10	%/W

#### For LD1117/A-1.8

PARAMETER	SYMBOL	TEST CONDITIO	NS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V <sub>OUT</sub>	$V_{IN}$ =3.8V, $I_{OUT}$ =10mA, $T_{J}$	=25°C	1.780	1.800	1.820	V
Output Voltage	V <sub>OUT</sub>	$V_{IN}$ =3.3 to 8V LD1117 : $I_{OUT}$ =0 ~ 800n LD1117A : $I_{OUT}$ =0 ~ 1000	1.760	1.800	1.840	V	
Line Regulation	$\Delta V_{OUT}$	$V_{IN}$ =3.3 to 8V, $I_{OUT}$ =0mA			1	6	mV
Load Regulation	$\Delta V_OUT$	$V_{IN}$ =3.3 $V$ LD1117 : $I_{OUT}$ =0 ~ 800n LD1117A : $I_{OUT}$ =0 ~ 1000		1	10	mV	
Temperature stability	$\Delta V_{OUT}$			0.5		%	
Long Term Stability	$\Delta V_{OUT}$	1000 hrs, T <sub>J</sub> =125°C		0.3		%	
Operating Input Voltage	$V_{IN}$	I <sub>OUT</sub> =100mA				10	V
Quiescent Current	IQ	V <sub>IN</sub> ≤8V			5	10	mA
Current Limit	I <sub>LIMIT</sub>	V <sub>IN</sub> =6.8V, T <sub>J</sub> =25°C	LD1117 LD1117A	800 1000			mA
Output Noise Voltage	eN	B=10Hz to 10KHz, T <sub>J</sub> =25	l .		100		μV
Supply Voltage Rejection	SVR	$I_{OUT}$ =40mA, f=120Hz, T <sub>J</sub> = $V_{IN}$ =5.5V, Vripple=1Vpp		60	75		dB
Dropout Voltage	V <sub>D</sub>	I <sub>OUT</sub> =100mA I <sub>OUT</sub> =500mA I <sub>OUT</sub> =800mA I <sub>OUT</sub> =1000 mA			1.00 1.15 1.20 1.20	1.10 1.25 1.30 1.30	V V V
Thermal Regulation		Ta=25°C, 30ms Pulse			0.01	0.10	%/W

#### For LD1117/A-2.5

I OI LUTTITA-Z.3							
PARAMETER	SYMBOL	TEST CONDITION	S	MIN.	TYP.	MAX.	UNIT
Output Voltage	\ \ <u>\</u>	$V_{IN}$ =4.5 $V$ , $I_{OUT}$ =10 $mA$ ,	1%	2.475	2.500	2.525	V
Output Voltage	V <sub>OUT</sub>	T <sub>J</sub> =25°C	2%	2.450	2.500	2.550	V
		V <sub>IN</sub> =3.9 to 10V	2%	2.450	2.500	2.550	
Output Voltage	V <sub>OUT</sub>	LD1117 : I <sub>OUT</sub> =0 ~ 800mA	4%	2.400	2.500	2.600	V
		LD1117A : I <sub>OUT</sub> =0 ~ 1.0A	170	2.100			.,
Line Regulation	$\Delta V_{OUT}$	$V_{IN}$ =3.9 to 10V, $I_{OUT}$ =0mA			1	6	mV
		$V_{IN}=3.9V$					
Load Regulation	$\Delta V_{OUT}$	LD1117 : I <sub>OUT</sub> =0 ~ 800mA		1	10	mV	
		LD1117A : I <sub>OUT</sub> =0 ~ 1000m					
Temperature stability	$\Delta V_{OUT}$				0.5		%
Long Term Stability	$\Delta V_{OUT}$	1000 hrs, T <sub>J</sub> =125°C		0.3		%	
Operating Input Voltage	V <sub>IN</sub>	I <sub>OUT</sub> =100mA			15	V	
Quiescent Current	ΙQ	V <sub>IN</sub> ≤10V			5	10	mA
Current Limit		L[	01117	800			mΛ
Current Limit	I <sub>LIMIT</sub>	$V_{IN}$ =7.5V, $T_J$ =25°C	D1117A	1000			mA
Output Noise Voltage	eN	B=10Hz to 10KHz, T <sub>J</sub> =25°0	)		100		μV
Supply Voltage Rejection	SVR	$I_{OUT}$ =40mA, f=120Hz, $T_J$ =2 $V_{IN}$ =5.5V, Vripple=1Vpp	5°C,	60	75		dB
		I <sub>OUT</sub> =100mA			1.00	1.10	V
Door out Maltana	.,	I <sub>OUT</sub> =500mA			1.15	1.25	V
Dropout Voltage	$V_D$	I <sub>OUT</sub> =800mA			1.20	1.30	V
		I <sub>OUT</sub> =1000 mA			1.20	1.30	V
Thermal Regulation		Ta=25°C, 30ms Pulse			0.01	0.10	%/W
	•			•			

#### For LD1117/A-2.85

PARAMETER	SYMBOL	TEST CONDITI	ONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V <sub>OUT</sub>	V <sub>IN</sub> =4.85V, I <sub>OUT</sub> =10mA,	T <sub>J</sub> =25°C	2.828	2.850	2.880	V
Output Voltage	V <sub>OUT</sub>	$V_{IN}$ =4.25 to 10V LD1117 : $I_{OUT}$ =0 ~ 800 LD1117A : $I_{OUT}$ =0 ~ 1.0 $\rho$		2.790	2.850	2.910	V
Line Regulation	$\Delta V_OUT$	/ <sub>IN</sub> =4.25 to 10V, Io=0mA			1	6	mV
Load Regulation		V <sub>IN</sub> =4.25V LD1117 : I <sub>ΟUT</sub> =0 ~ 800mA LD1117A : I <sub>ΟUT</sub> =0 ~ 1000mA			1	10	mV
Temperature stability	$\Delta V_OUT$			0.5		%	
Long Term Stability	$\Delta V_{OUT}$	1000 hrs, T <sub>J</sub> =125°C			0.3		%
Operating Input Voltage	$V_{IN}$	I <sub>OUT</sub> =100mA				15	V
Quiescent Current	IQ	V <sub>IN</sub> ≤10V			5	10	mA
Current Limit	I <sub>LIMIT</sub>	V <sub>IN</sub> =7.85V, T <sub>J</sub> =25°C	LD1117 LD1117A	800 1000			mA
Output Noise Voltage	eN	B=10Hz to 10KHz, T <sub>J</sub> =2	25°C		100		μV
Supply Voltage Rejection	SVR	I <sub>OUT</sub> =40mA, f=120Hz, T <sub>.</sub> V <sub>IN</sub> =5.85V, Vripple=1Vp		60	75		dB
Dropout Voltage	V <sub>D</sub>	I <sub>OUT</sub> =100mA I <sub>OUT</sub> =500mA I <sub>OUT</sub> =800mA I <sub>OUT</sub> =1000 mA			1.00 1.15 1.20 1.20	1.10 1.25 1.30 1.30	V V V
Thermal Regulation		Ta=25°C, 30ms Pulse			0.01	0.10	%/W

#### For LD1117/A-3.0

I OI EDITITA-3.0							
PARAMETER	SYMBOL	TEST CONDITION	S	MIN.	TYP.	MAX.	UNIT
Output Valtage		  V <sub>IN</sub> =5V,I <sub>OUT</sub> =10mA,T <sub>J</sub> =25°(	1%	2.970	3.000	3.030	V
Output Voltage	V <sub>OUT</sub>	VIN-SV,IOUT-TOTTA, IJ-25 (	2%	2.940	3.000	3.060	V
		V <sub>IN</sub> =4.5 to 10V	2%	2.940	3.000	3.060	
Output Voltage	$V_{OUT}$	LD1117 : I <sub>OUT</sub> =0 ~ 800mA					V
		LD1117A : I <sub>OUT</sub> =0 ~ 1.0A	4%	2.880	3.000	3.120	
Line Regulation	$\Delta V_{OUT}$	V <sub>IN</sub> =4.5 to 12V, I <sub>OUT</sub> =0mA			1	6	mV
		V <sub>IN</sub> =4.5V					
Load Regulation	$\Delta V_{OUT}$	LD1117 : I <sub>OUT</sub> =0 ~ 800mA		1	10	mV	
		LD1117A : I <sub>OUT</sub> =0 ~ 1000m					
Temperature stability	$\Delta V_{OUT}$				0.5		%
Long Term Stability	$\Delta V_{OUT}$	1000 hrs, T <sub>J</sub> =125°C			0.3		%
Operating Input Voltage	$V_{IN}$	I <sub>OUT</sub> =100mA				15	V
Quiescent Current	$I_{Q}$	V <sub>IN</sub> ≤10V			5	10	mA
Current Limit		L[	01117	800			mA
Current Limit	I <sub>LIMIT</sub>	$V_{IN}$ =8V, $T_J$ =25°C	01117A	1000			IIIA
Output Noise Voltage	eN	B=10Hz to 10KHz, T <sub>J</sub> =25°0			100		μV
Cumply Valtage Dejection	C) /D	$I_{OUT}$ =40mA, f=120Hz, $T_{J}$ =2	5°C,	60	75		40
Supply Voltage Rejection	SVR	V <sub>IN</sub> =6V, V <sub>RIPPLE</sub> =1Vpp		60	75		dB
		I <sub>OUT</sub> =100mA			1.00	1.10	V
Dropout Voltage	.,	I <sub>OUT</sub> =500mA			1.15	1.25	V
Dropout Voltage	$V_D$	I <sub>OUT</sub> =800mA			1.20	1.30	V
		I <sub>OUT</sub> =1000 mA			1.20	1.30	V
Thermal Regulation		Ta=25°C, 30ms Pulse	-		0.01	0.10	%/W

## For LD1117/A-3.3

PARAMETER	SYMBOL	TEST CONDITION	S	MIN.	TYP.	MAX.	UNIT
Output Voltage	V	V <sub>IN</sub> =5.3V,I <sub>OUT</sub> =10mA,	1%	3.267	3.300	3.333	V
Output Voltage	V <sub>OUT</sub>	T <sub>J</sub> =25°C	2%	3.235	3.300	3.365	V
		V <sub>IN</sub> =4.75 to 10V	2%	3.235	3.300	3.365	.,
Output Voltage	V <sub>оит</sub>	LD1117 : $I_{OUT}=0 \sim 800 \text{mA}$ LD1117A : $I_{OUT}=0 \sim 1.0 \text{A}$	4%	3.160	3.300	3.440	V
Line Regulation	$\Delta V_{OUT}$	V <sub>IN</sub> =4.75 to 15V, I <sub>OUT</sub> =0mA			1	6	mV
Load Regulation	$\Delta V_{OUT}$	V <sub>IN</sub> =4.75V LD1117 : I <sub>OUT</sub> =0 ~ 800mA LD1117A : I <sub>OUT</sub> =0 ~ 1000m			1	10	mV
Temperature stability	$\Delta V_{OUT}$			0.5		%	
Long Term Stability	$\Delta V_{OUT}$	1000 hrs, T <sub>J</sub> =125°C		0.3		%	
Operating Input Voltage	$V_{IN}$	I <sub>OUT</sub> =100mA				15	V
Quiescent Current	IQ	V <sub>IN</sub> ≤15V			5	10	mA
Current Limit	I <sub>LIMIT</sub>	IV <sub>IN</sub> =8.3V. L = 25°C —	D1117 D1117A	800 1000			mA
Output Noise Voltage	eN	B=10Hz to 10KHz, T <sub>J</sub> =25°0	)		100		μV
Supply Voltage Rejection	SVR	$I_{OUT}$ =40mA, f=120Hz, $T_J$ =2 $V_{IN}$ =6.3V, $V_{RIPPLE}$ =1Vpp	5°C,	60	75		dB
		I <sub>OUT</sub> =100mA			1.00	1.10	٧
Dropout Voltage	$V_D$	I <sub>OUT</sub> =500mA			1.15	1.25	V
Diopout Voltage	טי	I <sub>OUT</sub> =800mA			1.20	1.30	V
		I <sub>OUT</sub> =1000 mA			1.20	1.30	V
Thermal Regulation		Ta=25°C, 30ms Pulse			0.01	0.10	%/W

#### For LD1117/A-3.6

PARAMETER	SYMBOL	TEST CONDITION	ONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V <sub>OUT</sub>	V <sub>IN</sub> =5.6V, I <sub>OUT</sub> =10mA, T <sub>J</sub>	=25°C	3.564	3.600	3.636	V
Output Voltage	Vout	V <sub>IN</sub> =5 to 10V LD1117 : I <sub>OUT</sub> =0 ~ 800i LD1117A : I <sub>OUT</sub> =0 ~ 1.0A		3.528	3.600	3.672	V
Line Regulation	$\Delta V_{OUT}$	V <sub>IN</sub> =5 to 15V, I <sub>OUT</sub> =0mA			1	6	mV
Load Regulation		V <sub>IN</sub> =5V LD1117 : I <sub>OUT</sub> =0 ~ 800i LD1117A : I <sub>OUT</sub> =0 ~ 1000			1	10	mV
Temperature stability	$\Delta V_{OUT}$				0.5		%
Long Term Stability	$\Delta V_OUT$	1000 hrs, T <sub>J</sub> =125°C			0.3		%
Operating Input Voltage	V <sub>IN</sub>	I <sub>OUT</sub> =100mA				15	V
Quiescent Current	IQ	V <sub>IN</sub> ≤15V	_		5	10	mA
Current Limit	I <sub>LIMIT</sub>	V <sub>IN</sub> =8.6V, Tj=25°C	LD1117 LD1117A	800 1000			mA
Output Noise Voltage	eN	B=10Hz to 10KHz, T <sub>J</sub> =2	1		100		μV
Supply Voltage Rejection	SVR	I <sub>OUT</sub> =40mA, f=120Hz, T <sub>J</sub> V <sub>IN</sub> =6.6V, V <sub>RIPPLE</sub> =1Vpp	=25°C,	60	75		dB
		I <sub>OUT</sub> =100mA			1.00	1.10	V
Dropout Voltage	$V_D$	I <sub>OUT</sub> =500mA			1.15	1.25	V
Diopout Voltage	V <sub>D</sub>	I <sub>OUT</sub> =800mA			1.20	1.30	V
		I <sub>ОUT</sub> =1000 mA			1.20	1.30	V
Thermal Regulation		Ta=25°C, 30ms Pulse			0.01	0.10	%/W

#### For LD1117/A-5.0

1 01 ED11177A-3.0		T		ı	ı		
PARAMETER	SYMBOL	TEST CONDITION:	<u>S</u>	MIN.	TYP.	MAX.	UNIT
Output Voltage	VOUT	  V <sub>IN</sub> =7V,I <sub>OUT</sub> =10mA, T <sub>J</sub> =25°	<u> </u>	4.950	5.000	5.050	V
Output Voltage	VOUT	VIN-7 V,100T-10111A, 11 -29	2%	4.900	5.000	5.100	V
0 ( 1 ) ( ) ( ) ( )		V <sub>IN</sub> =6.5 to 15V	2%	4.900	5.000	5.100	.,
Output Voltage	V <sub>OUT</sub>	LD1117 : $I_{OUT}=0 \sim 800 \text{mA}$ LD1117A : $I_{OUT}=0 \sim 1.0 \text{A}$	4%	4.800	5.000	5.200	V
Line Regulation	$\Delta V_{OUT}$	V <sub>IN</sub> =6.5 to 15V, I <sub>OUT</sub> =0mA	<b></b>		1	6	mV
_		V <sub>IN</sub> =6.5V					
Load Regulation	$\Delta V_{OUT}$	LD1117 : I <sub>OUT</sub> =0 ~ 800mA		1	10	mV	
		LD1117A : I <sub>OUT</sub> =0 ~ 1000m/					
Temperature stability	$\Delta V_{OUT}$				0.5		%
Long Term Stability	$\Delta V_{OUT}$	1000 hrs, T <sub>J</sub> =125°C		0.3		%	
Operating Input Voltage	$V_{IN}$	I <sub>OUT</sub> =100mA				15	V
Quiescent Current	IQ	V <sub>IN</sub> ≤15V			5	10	mA
Current Limit		V <sub>IN</sub> =10V, T <sub>J</sub> =25°C	01117	800			mΛ
	I <sub>LIMIT</sub>	LE	D1117A	1000			mA
Output Noise Voltage	eN	B=10Hz to 10KHz, $T_J$ =25°C	)		100		μV
Supply Voltage Rejection	SVR	$I_{OUT}$ =40mA, f=120Hz, $T_J$ =29 $V_{IN}$ =8V, $V_{RIPPLE}$ =1Vpp	5°C,	60	75		dB
		I <sub>OUT</sub> =100mA			1.00	1.10	V
Dranaut Valtaria		I <sub>OUT</sub> =500mA			1.15	1.25	V
Dropout Voltage	$V_D$	I <sub>OUT</sub> =800mA			1.20	1.30	V
		I <sub>OUT</sub> =1000 mA			1.20	1.30	V
Thermal Regulation		Ta=25°C, 30ms Pulse			0.01	0.10	%/W

#### For LD1117/A-ADJUSTABLE

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT	
Reference Voltage	$V_{REF}$	V <sub>IN</sub> -V <sub>OUT</sub> =2V, I <sub>OUT</sub> =10mA	1.238	1.25	1.262	V	
Reference Voltage	V <sub>REF</sub>	V <sub>IN</sub> -V <sub>OUT</sub> =1.4 to 10V LD1117 : I <sub>OUT</sub> =10 ~ 800 LD1117A : I <sub>OUT</sub> =10 ~ 100	1.225		1.275	V	
Line Regulation	$\Delta V_{OUT}$	V <sub>IN</sub> -V <sub>OUT</sub> =1.5 to 13.75V, I		0.035	0.200	%	
Load Regulation	$\Delta V_OUT$	V <sub>IN</sub> -V <sub>OUT</sub> =3V LD1117 : I <sub>OUT</sub> =10 ~ 800 LD1117A : I <sub>OUT</sub> =10 ~ 100		0.10	0.400	%	
Temperature stability	$\Delta V_{OUT}$				0.50		%
Long Term Stability	$\Delta V_{OUT}$	1000 hrs, T <sub>J</sub> =125°C			0.3		%
Operating Input Voltage	V <sub>IN</sub>					15	V
Adjustment Pin Current	$I_{ADJ}$	V <sub>IN</sub> ≤15V			60	120	μА
Adjustment Pin Current Change	$\Delta I_{ADJ}$	V <sub>IN</sub> -V <sub>OUT</sub> =1.4 to 10V, LD1117 : I <sub>OUT</sub> =10 ~ 800mA LD1117A : I <sub>OUT</sub> =10 ~ 1000mA			1	5	μΑ
Minimum Load Current	I <sub>O(MIN)</sub>	V <sub>IN</sub> =15V			2	5	mA
Current Limit	I <sub>LIMIT</sub>	V <sub>IN</sub> -V <sub>OUT</sub> =5V, T <sub>J</sub> =25°C	LD1117 LD1117A	800 1000			mA
Output Noise (%Vo)	eN	B=10Hz to 10KHz, T <sub>J</sub> =25°C			0.003		%
Supply Voltage Rejection	SVR	I <sub>OUT</sub> =40mA, f=120Hz, T <sub>J</sub> =25°C, V <sub>IN</sub> -V <sub>OUT</sub> =3V, Vripple=1Vpp		60	75		dB
Dropout Voltage	V <sub>D</sub>	I <sub>OUT</sub> =100mA I <sub>OUT</sub> =500mA I <sub>OUT</sub> =800mA I <sub>OUT</sub> =1000mA			1.00 1.15 1.20 1.20	1.10 1.25 1.30 1.30	V V V
Thermal Regulation		Ta=25°C, 30ms Pulse			0.01	0.10	%/W

#### ■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT		
	SOT-223		15	Í	
	SOP-8		20	°C/W	
Thermal Resistance Junction-Case	TO-252 θ <sub>JC</sub>	12			
	TO-220		4		
	TO-263		4		
	SOT-223		165		
	SOP-8		150	°C/W	
Thermal Resistance Junction-Ambient	TO-252	$ heta_{JA}$	112		
	TO-220		54		
	TO-263		64		

#### ■ TYPICAL APPLICATIONS

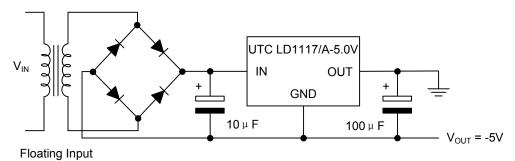


FIG.1 Negative Supply

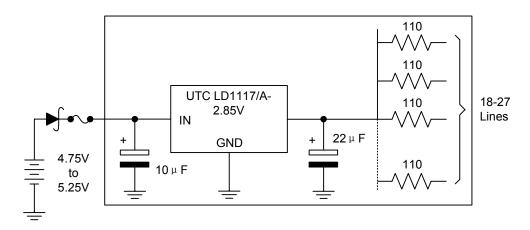


FIG.2 Active Terminator for SCSI-2 BUS

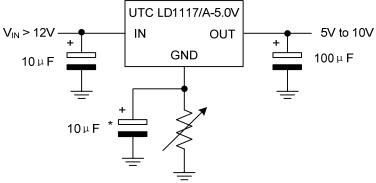


FIG.3 Circuit for Increasing Output Voltage

#### ■ APPLICATION NOTE of LD1117/A ADJUSTABLE

The LD1117/A ADJUSTABLE has a reference voltage of between the OUT and ADJ pins.  $I_{ADJ}$  is  $60\mu A$  typ. (120 $\mu A$  max.) and  $\Delta I_{ADJ}$  is  $1\mu A$  typ. (5 $\mu A$  max.).

R1 is normally fixed to  $120\Omega$ .

From figure 4 we obtain:

 $V_{OUT} = V_{REF} + R2(I_{ADJ} + I_{R1}) = V_{REF} + R2(I_{ADJ} + V_{REF} / R1) = V_{REF}(1 + R2/R1) + R2 \times I_{ADJ}$ 

Usually R2 value is in the range of few K $\Omega$ , so the R2 X I<sub>ADJ</sub> product could be neglected; then the above expression becomes:  $V_{OUT}=V_{REF}(1+R2/R1)$ 

For better load regulation, realize a good Kelvin connection of R1 and R2 is important. Particularly R1 connection must be realized very close to OUT and ADJ pin, while R2 ground connection must be placed as near as possible to the negative Load pin. Ripple rejection can be improved by introducing a  $10\mu F$  electrolytic capacitor placed in parallel to the R2 resistor (See Fig. 5)

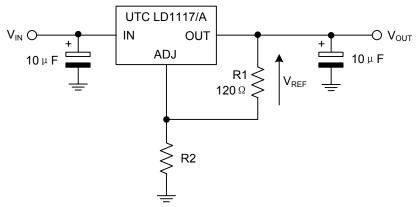


FIG.4 Adjustable Output Voltage Application Circuit

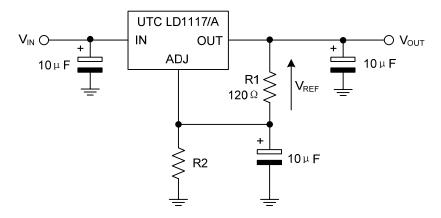
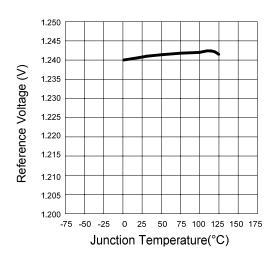


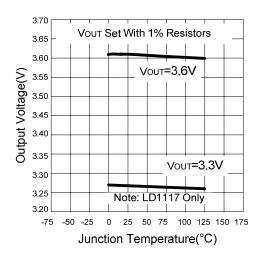
FIG.5 Adjustable Output Voltage Application with improved Ripple Rejection.

#### ■ TYPICAL PERFORMANCE CHARACTERISTICS

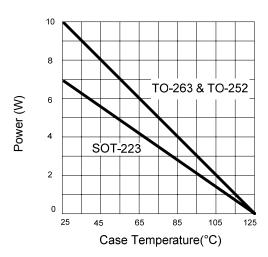
#### Reference Voltge vs. Temperature



#### Output Voltage vs. Temperautre



#### Maximum Power Dissipation



UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.